

Western Public Health Casebooks

2019

Case 10 : Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

Avery Prince
Western University

Mary-Liz Warwick
The Northern Ontario Centre for Learning Differences

Wendy Larouche
Learning Disabilities Association of Sudbury

Gerald McKinley
Western University

Follow this and additional works at: <https://ir.lib.uwo.ca/westernpublichealthcases>

Recommended Citation

Prince, A., Warwick, M.-L., Larouche, W. & McKinley, G. (2019). Supporting Student with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities. In: Sibbald, S.L. & McKinley, G. [eds] Western Public Health Casebook 2019. London, ON: Public Health Casebook Publishing.

This Case is brought to you for free and open access by the Public Health Program at Scholarship@Western. It has been accepted for inclusion in Western Public Health Casebooks by an authorized editor of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.

CASE 10**Supporting Students with Learning Disabilities:
Reducing Secondary School Non-Completion and its
Associated Health Disparities**

Avery Prince, BPHE, MPH (MPH Class of 2018)

Mary-Liz Warwick, BA, MA (c) (Executive Director, The Learning Disabilities Association of Sudbury & the Northern Ontario for Learning Differences)

*Wendy Larouche (Resource Facilitator and Community Outreach,
Learning Disabilities Associate of Sudbury)*

Gerald McKinley, PhD (Assistant Professor, Western University)

Data on the prevalence of learning disabilities (LDs) among children is not readily available at the national level... for reasons including lack of diagnosis and parent reluctance to identify because of stigmatization. Ten percent having LDs is a low estimate, but can apply to the childhood and adult populations.

— Public Health Agency of Canada, 2009

It was a cloudy spring day and Shelley van Dam was sitting at her desk, sifting through and organizing her emails. As the Executive Director of the Learning Disabilities Association of Sudbury (LDAS), Shelley spends most of her time ensuring that the organization's programs and services are effectively provided to local youth and adolescents who have been diagnosed as having a learning disability (LD).

The LDAS is in its third and final year of an Ontario Trillium Foundation funding cycle for a grant that allows Shelley to employ resource facilitators in satellite offices located in North Bay, Timmins, and Sault Ste. Marie. These facilitators help support students who have LDs and their families, and they help them navigate the education system. Shelley continues to grow uneasy about the looming possibility that her satellite operations may lose funding and have to close. Losing access to these additional facilitators could negatively impact the rates of high school graduation for students who live in these smaller cities and have LDs because this would put additional strain on the Sudbury employees who would then be required to travel longer distances. In addition, the families in the other cities would not have a local advocate to fight for their children, which would result in more students falling through the cracks of the education system.

Shelley is aware of some dated literature and statistics concerning the graduation success rates of students who have LDs, with the most pertinent information coming from a 2007 study conducted by the Learning Disabilities Association of Canada (LDAC-ACTA). She remembers that even after LDAC-ACTA was incorporated in 1971, results from the 2007 study found that 28.3% of Canadians who had LDs had attained an education level of "less than high school" compared with 14.9% of the general population (LDAC-ACTA, 2007). She was concerned about the risks of not having support in the satellite cities, and how the lack of assistance would impact the education experiences of students who have LDs.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

Shelley hopes to obtain funding from a more sustainable source such as the Ministry of Children, Community and Social Services. Sustainable funding would allow the organization to operate as is, while also expanding current programs to include other categories of learning differences. Her first step was to write a report to her board detailing the issue, outlining some recommendations and devising a proposal for the next steps. She wasn't sure where to begin, so she opened up her web browser and typed "recent literature on learning disabilities".

BACKGROUND

Learning disabilities refer to various disorders that affect the acquisition, retention, understanding, and organization of verbal and/or nonverbal information. The LDAC-ACTA report from 2007 states that LDs are specific (oral language, reading, math skills, or written language), and are categorized separately from intellectual disabilities. This report also states that people who have learning disabilities may also have difficulties with organizational skills, social perception, social interaction, and perspective taking. These disabilities are caused by genetic and/or neurobiological factors, or result from injuries that alter brain functioning in a manner that affects processes related to learning. Individuals who have learning disabilities have average- to above-average intelligence and are very capable of learning, but stigma accompanying the word "disability" or "inability to achieve" persists (LDAC-ACTA, 2007). Learning disabilities are commonly downplayed by affected people and their parents, and disclosure of a disability is sometimes avoided due to fear of being stigmatized (Waterfield & Whelan, 2017).

The LDAC-ACTA was founded in 1963 to act as a national voice for people who have learning disabilities and those who support these people. The LDAC-ACTA provides public awareness by advocating, conducting research, and focusing on health and education (LDAC-ACTA, 2017). The Learning Disabilities Association of Canada (LDAC-ACTA) operates across the nation, with an extended network of chapters throughout more than 55 communities. The Sudbury chapter, or the LDAS, aims to "support all individuals with learning disabilities in reaching their full potential, within a community that values their unique contributions and abilities" (LDAS, 2015). This has proven to be a continued challenge for the organization because they must provide quality support throughout the entire City of Greater Sudbury. This alone acts as a barrier to the LDAS providing adequate services because the City of Greater Sudbury is geographically larger (3,627 km²) than any other municipality in Ontario and is the second largest municipality in Canada (Greater Sudbury, 2018). The organization's geographical area of operations not only includes Sudbury and the surrounding area, but the LDAS also maintains a presence in smaller cities across Northeastern Ontario, including North Bay, Sault Ste. Marie, and Timmins. Each of the aforementioned cities contains satellite LDAS offices that employ a resource facilitator who easily and efficiently meets the needs of the various school boards, youth with learning disabilities, and their families or caregivers. The organization has prioritized four different strategies with the hope of ensuring that the best possible services are provided:

1. Reaching Families

Reach more families of children and youth who have learning differences through an expansion of operations, as it is expected that through engagement, feedback, and collaboration, children, youth, and families will receive the necessary services in an efficient manner.

2. Developing a Youth Organization

Create a youth-led body that will provide a supportive environment for teens who have learning disabilities in order to help develop their emotional and social skills, which should also help teens and other youth who have learning disabilities reach their true potential.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

3. Sustainability

Maintain high-quality programs, services, and support for years to come. Expansion of services provided can include all differences, and is the basis of the newly created Northern Ontario Centre for Learning Differences.

4. Community Awareness

Increase the public's overall level of understanding and awareness of learning disabilities, including the programs and services LDAS provides. Community awareness is necessary so that the challenges and stigma facing children and youth who have learning disabilities can be better explained; this can be achieved through the creation of community awareness events.

DEFINING LEARNING DISABILITIES

The LDAC-ACTA (2017) uses the following parameters when defining learning disabilities:

- Learning disabilities are distinct from global intellectual deficiencies
- Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering, or learning
- Learning disabilities range in severity and may affect any or several areas of life
- Learning disabilities are lifelong
- Learning disabilities are neurobiological and/or genetic in origin

Another Canadian nonprofit organization, The National Institute for Learning Development, which is dedicated to training educators to work with children and adults who have learning difficulties through individualized educational therapy, has also characterized learning deficits. The organization states that learning disabilities are a pattern of neurological dysfunctions in the brain that cause a person to have difficulty correctly receiving information (perception), correctly processing information (cognition/thinking), or appropriately responding to information (written and verbal expression, visual–motor coordination, etc.), with such deficits mainly falling into three basic categories (National Institute for Learning Development, 2017):

1. Dyslexia: Difficulty with words (deficits in the ability to hear words and manipulate sounds, in addition to deficits in the ability to read and spell words accurately and fluently).
2. Dysgraphia: Difficulty with writing (deficits with spelling, with the motor skills necessary to write on paper, and with the thinking needed for vocabulary retrieval).
3. Dyscalculia: Difficulty with calculations and mathematics (deficits with basic number sense and early number concepts in addition to math calculations and math reasoning).

The American LDAC-ACTA counterpart, or Learning Disabilities Association of America, uses its own definition for learning disabilities, which includes neurologically based processing problems that can interfere with learning basic skills such as reading, writing, and/or math, in addition to interfering with other skills such as organization, time planning, abstract reasoning, long- or short-term memory, and attention (Learning Disabilities Association of America, 2018). According to the *Individuals with Disabilities Education Act* from American legislation, the proper term that describes learning disabilities is *specific learning disability*, and includes the following disorders:

1. Auditory Processing Disorder: affects how sound that travels unimpeded through the ear is processed or interpreted by the brain (difficulty distinguishing between subtle sounds in words, or when sounds are loud and clear enough to be heard).
2. Dyscalculia: affects a person's ability to understand numbers and learn math facts.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

3. Dysgraphia: affects a person's handwriting ability and fine motor skills.
4. Dyslexia: affects reading and related language-based processing skills.
5. Language Processing Disorder: a specific type of auditory processing disorder that makes it difficult for a person to attach meaning to sound groups that form words, sentences, and stories.
6. Nonverbal Learning Disabilities: significant discrepancy between higher verbal skills and weaker motor, visual-spatial, and social skills.
7. Visual Perception/Visual Motor Deficit: affects the understanding of information that a person sees, or the ability to draw or copy.

Literature focusing on learning disabilities in a Canadian context is lacking and there is limited agreement on learning disability definitions and terms within the existing, largely American, evidence base (Waterfield & Whelan, 2017). The largest difference in the definitions comes from the inclusion of attention in the American definition of a learning disability, which often stops Shelley from using any programs or procedures that may be deemed beneficial south of the border. She thinks that it would be beneficial to agree about how to categorize learning disabilities, not just within the Canadian context, but also within an American and international context. This would be a great first step in helping to implement new and innovative practices that could better identify and accommodate students who have learning disabilities, but she doubts it will happen any time soon.

EDUCATION

Having a high school diploma is essential in today's labour market. Researchers state that "high school dropout often leads to long-term economic hardships that impair health and family function, which in turn can perpetuate inequalities across generations" (Dupéré et al., 2018). Education is a strong predictor of health outcomes, including mortality, since less education is commonly associated with smaller social support networks and risky health behaviours such as smoking and maintaining unhealthy eating habits. Education, or lack thereof, is also associated with attaining less income (on average), which can lead to poorer eating habits, unsafe or unhealthy living conditions, and increased mental health concerns (Lansford, Dodge, Pettit, & Bates, 2016).

Shelley found information from the 2016 federal census stating that 14% of all Canadians aged 25 and over reported their highest education level as "less than high school graduation" (Statistics Canada, 2017). This motivated Shelley to dig deeper and find more information about high school non-completion—how to define the problem, identify the options, and hopefully find a solution that will lead to increased funding. Shelley was aware of the *Putting a Canadian Face on Learning Disabilities* (PACFOLD) report that was completed by LDAC-ACTA in 2007, which revealed some alarming statistics. The study showed that 28.3% of Canadians aged 22 to 29 years old had reported not completing high school, and how much worse that percentage was compared with the general population rate of 14% (LDAC-ACTA, 2007; Statistics Canada, 2016). She wanted to find more recent statistics and was thankful to find a 2012 census that provided a more relevant snapshot of learning disabilities throughout Canada. She learned that approximately 622,300 people, or 2.3% of the Canadian adult population aged 15 and up, reported having a learning disability (Statistics Canada, 2015). In addition, the census revealed that 33% of adults who have learning disabilities attained a highest level of education of "less than high school," compared with 13.1% of adults who do not have a learning disability (Exhibit 1). Therefore, students who have learning disabilities were approximately 2.5 times more likely not to graduate compared with the general population, despite the presence of the LDAC-ACTA and other such organizations across Canada. Shelley wondered how drastically that number would increase if her organization was unable to continue providing the resources and assistance to the students in Northeastern Ontario who have learning disabilities. After

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

seeing that fewer than 36% of adults who have learning disabilities had achieved a postsecondary level of education compared with 61.1% of those who do not have learning disabilities (Exhibit 1), she further understood why her role and work were so crucial.

After gaining a more comprehensive understanding of the success of students who have learning disabilities, and an understanding of the sheer number of Canadians who have learning disabilities who drop out of high school compared with the general population, Shelley came across another article. It was a 2008 report to the Canadian Council on Learning written by Dr. Olena Hankivsky, a professor at Simon Fraser University, discussing the costs associated with dropping out of high school in Canada (Hankivsky, 2008). Although the report was more than 10 years old, Shelley was still excited to see the cost estimates, broken down per year and over a 35-year life span, that were attributable to dropping out of high school. She had always wondered what the price of high school non-completion was because she assumed that it was high both for the person who dropped out and for the public. But after seeing what the average costs per dropout were, and noticing the total aggregated costs across various categories, she knew that the problem was much worse than she had previously estimated. Shelley read, for example, that the average public cost of social assistance per dropout was \$4,230 annually, for an overall total of \$969 million annually across Canada (Exhibit 4). She also saw that, on average, the annual health care costs for the individual were \$8,098, or \$211,471 across the lifetime of a single high school dropout. It amazed Shelley to see such high costs both for the individual and for the public. She felt hopeful that these numbers would allow her organization to continue providing services that would help minimize the number of students who have learning disabilities from dropping out of high school.

HEALTH

Health and wellness can be impacted by educational attainment, which Shelley has seen within her own social network. She knows that, on average, people who have more education and greater average incomes are generally healthier and in better shape. However, she was not sure exactly how this translated to those who dropped out of high school, and she wanted to examine this specifically in the context of students who have learning disabilities, particularly in terms of negative outcomes. She found a study by Cook, Li, and Heinrich (2015) that examined whether there was an association between obesity, physical activity, and sedentary behaviour among youth who have learning disabilities and Attention Deficit Hyperactivity Disorder (ADHD). She learned that youth who have learning disabilities only, ADHD only, or comorbid LD/ADHD were significantly less likely to meet recommended levels of physical activity, and that youth who have learning disabilities were significantly more likely to exceed recommended levels of sedentary behaviour (Cook et al., 2015).

Since there is little research available regarding the health outcomes of people who have learning disabilities, Shelley shifted her focus to the health outcomes of the general population who do not graduate from high school. She found that people who do not complete upper secondary school or high school are at higher risk of experiencing poorer health and engaging in criminal behaviour (Holen, Waaktaar, & Sagatun, 2017). Some of the predicting, non-completion factors for high school included family-related determinants such as low levels of parental education, low family income, and living in a single-parent household. Another study examined whether there was an association between chronic disease and dropping out of high school (Vaughn, Salas-Wright, & Maynard, 2014). Shelley was surprised to find that there were statistically significant associations between multiple chronic diseases and dropping out. The strongest associated health concern is the occurrence of strokes, with an adjusted odds ratio of 1.55 (Vaughn et al., 2014). Asthma, diabetes, and heart disease also had statistically significant adjusted odds ratios of 1.27, 1.32, and 1.18 respectively, for people who did not complete high school compared with those who did. Shelley determined that this must have contributed to the

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

higher health care costs for people lacking a high school diploma, and she felt very concerned for people who have learning disabilities because they are at far greater risk of not graduating from high school and consequently experiencing greater difficulties with their health.

FOOD SECURITY

Individuals who are unable to achieve post-secondary levels of education often have inconsistent access to food. Food and nutrition are also important factors in achieving educational success (Tarasuk et al., 2015). Shelley wondered whether adults who have learning disabilities and failed to graduate high school were at increased risk of experiencing food insecurity or having unhealthy eating behaviours. Even before discovering any information related to education, Shelley found some studies that examined the association between overall health and household food insecurity. One study showed there were drastic changes in annual health care costs between households that were food secure and those that were not. Compared with total annual health care costs in food secure households, the adjusted annual health care costs were \$235 (16%) higher in marginally insecure households and \$1092 (76%) higher in households that experienced severe food insecurity (Tarasuk et al., 2015). She remembered Hankivsky's cost of dropping out report and wondered whether part of the personal health care costs per high school dropout were attributable to these increased health care costs. A more recent study showed that, compared with people who have food security, people who were marginally food secure used mental health care services 1.15 times more, and people who were severely food insecure used mental health services 1.5 times more (Tarasuk, Cheng, Gundersen, de Oliveira, & Kurdyak, 2018). In this study, 9.5% of people who had not graduated from high school were food secure, 16% were marginally food insecure, 21.2% were moderately food insecure, and 25.1% were severely food insecure. Shelley found that 33% of the people who had severe food insecurities relied on social assistance as their main source of income, compared with just 1.3% of those who were food secure. It was all starting to connect. This study alone clearly showed that people who could not regularly access good-quality food used health care services more often, which in turn cost the province and taxpayers more. Shelley knew that unless the LDAS could continue its advocacy and provide the necessary programs and services for local students who had learning disabilities, more Canadians would be faced with similar health disparities, which included food insecurity, increased health care costs, and barriers to achieving higher levels of education.

CRIME

Shelley remembered attending a community gala and discussing some of the initiatives funded by the police with Sudbury's Chief of Police. These initiatives aimed to improve later life outcomes for children and youth before they are negatively introduced to law enforcement. She was wondering whether there was an opportunity for a partnership since she remembered hearing that high school dropouts may be more likely to commit crimes than the general population.

A study by Mallett (2014) showed that 28% to 45% of all incarcerated youth also had special education disabilities. Among the detained youth offenders who had special education disabilities, 48% had an identified emotional disturbance and another 39% had a specific learning disability. The author noted some risk factors that increased the likelihood of having a learning disability, including living in poverty, being male, experiencing poor family functioning, and having lower household education attainment. Unsurprisingly, these factors mirror the risk factors for juvenile delinquency. Children at risk for academic failure in elementary schools often had unidentified special education and learning disability needs, with those unidentified adolescents disproportionately representing those who were suspended, expelled, and/or dropped out of high school (Mallett, 2014). The article also described how adolescents who have learning disabilities face a two to three times greater risk of being involved in offending activities

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

than those who do not have learning disabilities, which is exactly what Shelley had suspected. Another study demonstrated that an estimated 30% to 50% of adult prisoners had a learning disability and that correctional education programs did not regularly support these people, even though research has shown that correctional education decreases recidivism rates (Koo, 2015). In 2004, 36% of state prisoners had attained less than a high school education compared with only 19% of the general American population aged 16 and up. What surprised Shelley was that the research by Koo had shown that although only 3% to 15% of all adults have a learning disability, as many as 30% to 50% of the adult prison population have one. Stewart, Wilton, & Sapers (2016) showed that, in a Canadian prison population, offenders who had cognitive deficits were three times more likely to have a learning disability (44.3%) than offenders who had none (14.7%).

SOCIOECONOMIC STATUS

Shelley wondered what other health concerns could be attributed to Canadians who had learning disabilities as a result of this intergenerational cycle of high school non-completion. There were some disheartening statistics in the two different censuses she had read. For instance, across all reported age groups, people who have learning disabilities were disproportionately more likely to be unemployed (Exhibit 2) (Statistics Canada, 2015). The same data also showed that people who had attained a highest education level of “less than high school” also had higher unemployment rates than people in all other categories (Exhibit 3).

One study demonstrated that, in terms of the likelihood of children having ADHD, there was an association between household income and parental ADHD diagnosis (Rowland et al., 2018). The researchers found that the overall socioeconomic status (SES) gradient was stronger in families who did not have a parent with ADHD, and weaker for children in families who did. Children from low-income households had astonishing odds (after adjusting for covariates) of having ADHD, at 6.2 times higher than children from high-income families. Results from this study further proved that SES and parental ADHD history were both strong risk factors for an ADHD diagnosis. Although Shelley understands that the LDAS does not provide support for students who have ADHD, she was still intrigued by these findings. Fitzpatrick et al. (2015) determined that people who had low personal and household incomes, attained less than postsecondary education, and lived in neighbourhoods with a high dependency on social support had greatly increased odds of becoming future high-cost users of Ontario's health care system. They also noted that although Canadians have universal health coverage through their publicly funded health care systems, there was still an observable relationship between SES and frequent use of primary care. After the researchers adjusted for covariates such as area, age, and gender, the strongest associations of becoming a high-cost health care user related to homeownership and food security. Fitzpatrick et al. (2015) determined that low SES is also linked to increased risk of preventable hospitalizations, higher rates of hospitalization, longer stays if admitted, more frequent emergency department use, and poorer continuity of care. The research showed that income, education, homeownership, food security, and neighbourhood marginalization were all considered to be strongly associated indicators of SES for future high-cost health care users.

Shelley reflected on the findings by Dupéré et al. (2018) that showed that dropping out of high school often leads to other long-term hardships that impair health and family function and can perpetuate inequalities across generations. She also came across studies describing the association between economic hardship and child maltreatment and how this can contribute to reduced access to education. She read that children whose families were struggling economically were more likely to have developmental concerns and were at a significantly increased risk of becoming victims of maltreatment (Lefebvre, Fallon, Van Wert, & Filippelli, 2017). The researchers found it interesting that a child's relationship with at least one stable,

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

caring, responsive, and supportive adult had been determined to be the most critical developmental protective factor for promoting resilience. A related study showed that high-quality teacher–child relationships predicted low levels of externalizing behaviours or risk taking, and also acted as a protective factor for helping to prevent children with high levels of internalizing problems from developing long-term mental health concerns (Holen et al., 2017).

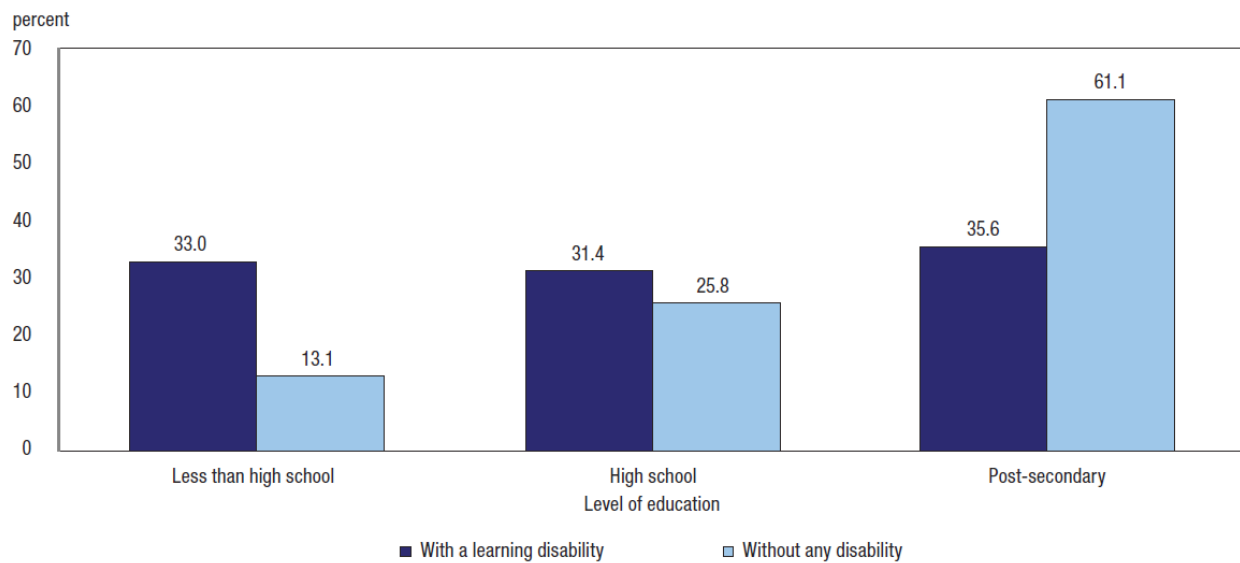
CONCLUSION

Shelley was satisfied and excited about the amount of information that she had gathered. Finding the socioeconomic costs associated with high school non-completion in Canada was extremely beneficial, as was her discovery of recent statistics about the proportion of Canadian students who have learning disabilities who were unable to successfully graduate from high school. These statistics, along with other data supporting a public health perspective of the overall impact that high school non-completion has on a person's future health and well-being should give the LDAS a fighting chance to obtain a crucial, sustainable source of funding that will keep her offices in Timmins, North Bay, and Sault Ste. Marie operating. She smiled and turned her chair to look out the window of the local university where this information would hopefully help the local youth with learning disabilities in their future endeavours. Now, she needed to decide which evidence to use that was most pertinent to her region. She sat at her desk with a blank template that read "Report to the Board". She needed to convince the board about the importance of the issue and the feasibility of the solutions. Funding was tight, but she knew she could come up with a plan that the board would be able to support. Her long day of searching the literature was done, but she knew the real work of synthesizing and disseminating this information was just starting.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

EXHIBIT 1

Chart 3: Proportion of Adults with a Learning Disability Compared to Those without a Disability, by Highest Level of Education Aged 15 To 64, Canada, 2012



Notes: Excludes population still in school. Post-secondary includes trades certificates, college diplomas, university certificates below bachelor level and university degrees.
Source: Statistics Canada, Canadian Survey on Disability, 2012.

Source: Statistics Canada, 2015, pg 7.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

EXHIBIT 2

Estimated Tangible Costs of High School Non-Completion in Canada (2008 Dollars)

	Estimated cost per dropout		Aggregated total in Canada	
	Annual	Lifetime	Annual	Lifetime
Tangible Costs				
Health (private ^a)	\$8,098	\$211,471 ^b	\$23.8 billion	\$623 billion ^b
Social Assistance (public)	\$4,230		\$969 million	
Crime (public)	\$224		\$350 million	
Labour and Employment				
Earning loss (private)	\$3,491	\$104,222 ^c	\$10.3 billion	\$307 billion ^c
Tax revenue loss (public)	\$226	\$6,882	\$378 million	\$11.5 billion
Revenue loss in employment insurance premium (public)	\$68	\$2,063	\$201 million	\$6.1 billion
Employment insurance cost (public)	\$2,767		\$1.1 billion	

^aData on public costs are not available.

^b"Lifetime" costs related to health reflect earning loss over a 35 years.

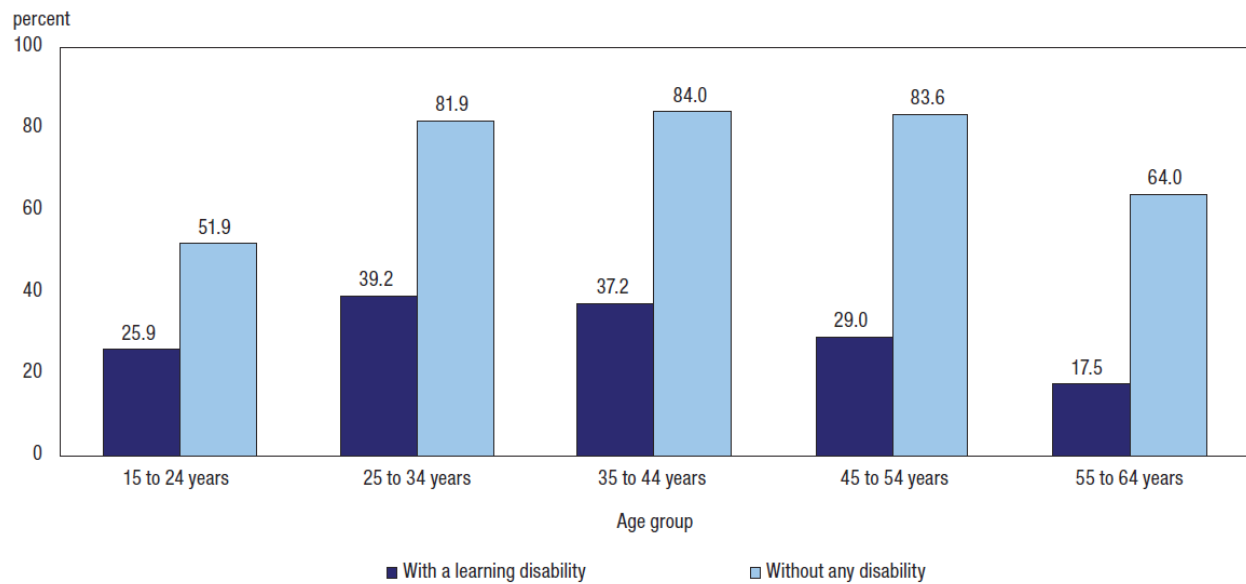
^c"Lifetime" costs related to income reflect earning loss over a 35-year span (assuming lifetime earnings start from age 20 through 54). ""

Source: Hankivsky, 2008, pg. 5.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

EXHIBIT 3

Chart 5: Employment Rates of Adults with a Learning Disability and without any Disability by Age Group, Aged 15 to 64 years, Canada, 2012



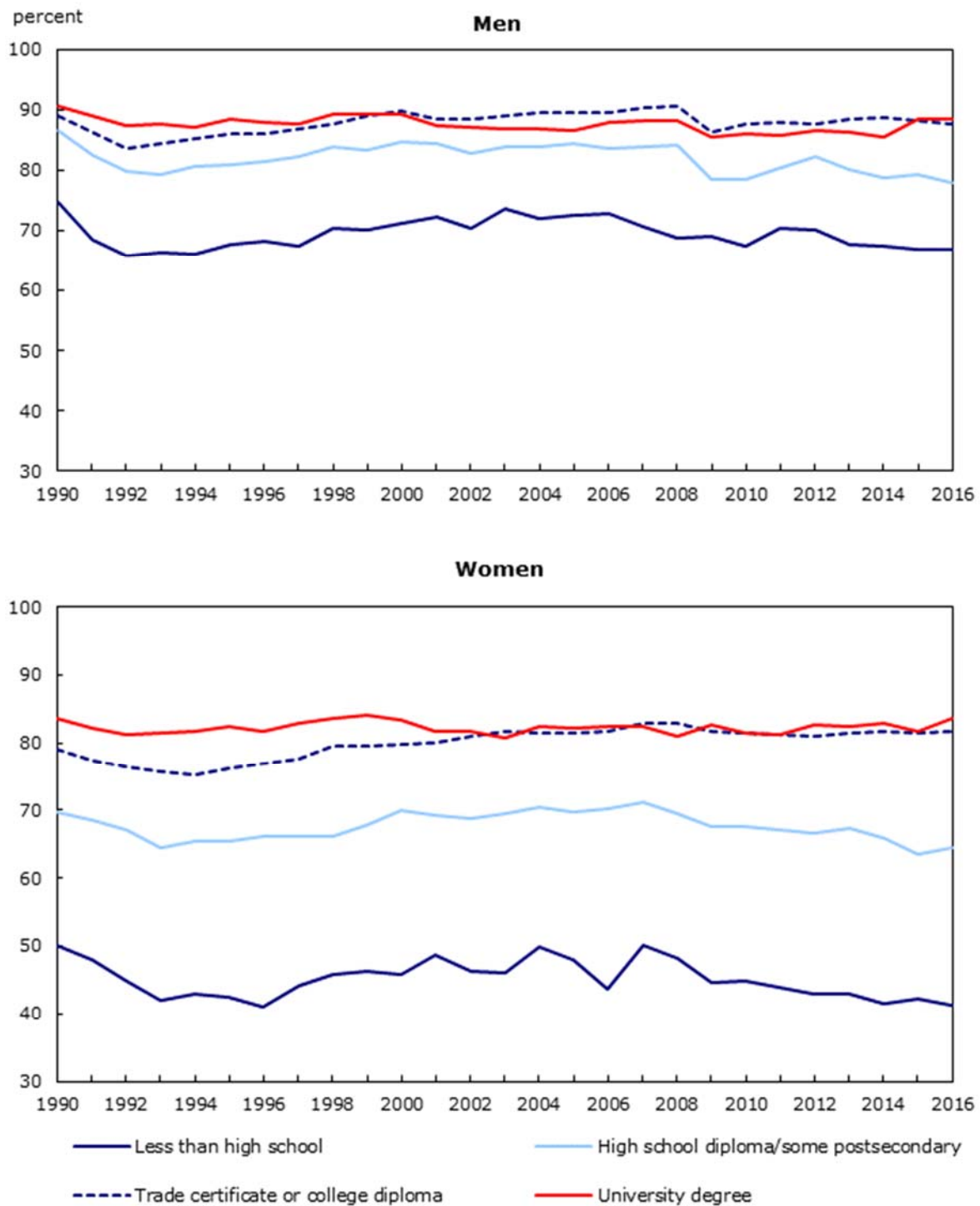
Source: Statistics Canada, Canadian Survey on Disability, 2012.

Source: Statistics Canada, 2015, pg. 9.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

EXHIBIT 4

**Chart 4: Unemployment Rate, Men and Women Aged 25 to 34
by Level of Education, 1990 to 2016**



Source: Statistics Canada, Labour Force Survey, 1990 to 2016.

Source: Statistics Canada, 2017, pg. 7.

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

REFERENCES

1. Cook, B. G., Li, D., & Heinrich, K. M. (2015). Obesity, physical activity, and sedentary behavior of youth with learning disabilities and ADHD. *Journal of Learning Disabilities, 48*(6), 563–576. doi: 10.1177/0022219413518582
2. Dupéré, V., Dion, E., Leventhal, T., Archambault, I., Crosnoe, R., & Janosz, M. (2018). High school dropout in proximal context: The triggering role of stressful life events. *Child Development, 89*(2), e107–e122. doi: 10.1111/cdev.12792
3. Fitzpatrick, T., Rosella, L. C., Calzavara, A., Petch, J., Pinto, A. D., Manson, H., Goel, V., & Wodchis, W. P. (2015). Looking beyond income and education: Socioeconomic status gradients among future high-cost users of health care. *American Journal of Preventive Medicine, 49*(2), 161–171. doi.org/10.1016/j.amepre.2015.02.018
4. Greater Sudbury (2018). About Greater Sudbury. Retrieved from <https://www.greatersudbury.ca/live/about-greater-sudbury/>
5. Hankivsky, O. (2008). *Cost estimates of dropping out of high school in Canada*. Ottawa, ON: Canadian Council on Learning. Retrieved from: https://www.researchgate.net/publication/237239069_Cost_Estimates_of_Dropping_Out_of_High_School_in_Canada
6. Holen, S., Waaktaar, T., & Sagatun, Å. (2017). A chance lost in the prevention of school dropout? Teacher–student relationships mediate the effect of mental health problems on noncompletion of upper-secondary school. *Scandinavian Journal of Educational Research, 62*(5), 737–753. doi.org/10.1080/00313831.2017.1306801
7. Individuals with Disabilities Education Act (2004). Section 1414 (b) (6) Specific learning disabilities. Retrieved from <https://sites.ed.gov/idea/statute-chapter-33/subchapter-II/1414/b/6>
8. Koo, A. (2015). Correctional education can make a greater impact on recidivism by supporting adult inmates with learning disabilities. *Journal of Criminal Law and Criminology, 105*(1), 233-270. Retrieved from <https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=7549&context=jclc>
9. Lansford, J. E., Dodge, K. A., Pettit, G. S., & Bates, J. E. (2016). A public health perspective on school dropout and adult outcomes: A prospective study of risk and protective factors from age 5 to 27 years. *Journal of Adolescent Health, 58*(6), 652–658. doi: 10.1016/j.jadohealth.2016.01.014
10. Learning Disabilities Association of Sudbury. (2015). History. Retrieved from <https://ldasudbury.ca/>
11. Learning Disabilities Association of Canada (2007). Putting a Canadian face on learning disabilities (PACFOLD). Retrieved from <http://www.pacfold.ca/download/WhatIs/en/Highlights.pdf>
12. Learning Disabilities Association of Canada. (2017). Understanding learning disabilities. Retrieved from <https://www.ldac-acta.ca/understanding-learning-disabilities>
13. Learning Disabilities Association of America (2018). Types of learning disabilities. Retrieved from <https://ldaamerica.org/types-of-learning-disabilities/>
14. National Institute for Learning Development Canada. (2017). Learning Disabilities. Retrieved from <https://nildcanada.org/learning-disabilities/>
15. Lefebvre, R., Fallon, B., Van Wert, M., & Filippelli, J. (2017). Examining the relationship between economic hardship and child maltreatment using data from the Ontario incidence study of reported child abuse and neglect–2013 (OIS-2013). *Behavioral Sciences, 7*(1), E6. doi:10.3390/bs7010006

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

16. Mallett, C. A. (2014). Youthful offending and delinquency: The comorbid impact of maltreatment, mental health problems, and learning disabilities. *Child and Adolescent Social Work Journal*, 31(4), 369–392. doi: 10.1007/s10560-013-0323-3
17. Public Health Agency of Canada (2009). Report on the state of public health in Canada. Retrieved from <http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2009/fr-rc/pdf/cphorsphc-respcacsp-eng.pdf>
18. Rowland, A. S., Skipper, B. J., Rabiner, D. L., Qeadan, F., Campbell, R. A., Naftel, A. J., & Umbach, D. M. (2018). Attention-Deficit/Hyperactivity Disorder (ADHD): Interaction between socioeconomic status and parental history of ADHD determines prevalence. *Journal of Child Psychology and Psychiatry*, 59(3), 213–222. doi: 10.1111/jcpp.12775
19. Statistics Canada. (2015). Learning disabilities among Canadians aged 15 years and older, 2012. Retrieved from <https://www150.statcan.gc.ca/n1/en/pub/89-654-x/89-654-x2014003-eng.pdf?st=cbDOrAyQ>
20. Statistics Canada. (2017). Young men and women without a high school diploma. Retrieved from https://www150.statcan.gc.ca/n1/en/pub/75-006-x/2017001/article/14824-eng.pdf?st=OnK2U_N2
21. Stewart, L. A., Wilton, G., & Sapers, J. (2016). Offenders with cognitive deficits in a Canadian prison population: Prevalence, profile, and outcomes. *International Journal of Law and Psychiatry*, 44, 7–14. doi: 10.1016/j.ijlp.2015.08.026
22. Tarasuk, V., Cheng, J., de Oliveira, C., Dachner, N., Gundersen, C., & Kurdyak, P. (2015). Association between household food insecurity and annual health care costs. *Canadian Medical Association Journal*, 187(14), E429–E436. doi: 10.1503/cmaj.150234
23. Tarasuk, V., Cheng, J., Gundersen, C., de Oliveira, C., & Kurdyak, P. (2018). The relation between food insecurity and mental health care service utilization in Ontario. *The Canadian Journal of Psychiatry*, 63(8), 557–569. doi.org/10.1177/0706743717752879
24. Vaughn, M. G., Salas-Wright, C. P., & Maynard, B. R. (2014). Dropping out of school and chronic disease in the United States. *Journal of Public Health*, 22(3), 265–270. doi: 10.1007/s10389-014-0615-x
25. Waterfield, B., & Whelan, E. (2017). Learning disabled students and access to accommodations: Socioeconomic status, capital, and stigma. *Disability & Society*, 32(7), 986–1006. doi.org/10.1080/09687599.2017.1331838

INSTRUCTOR GUIDANCE

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

Avery Prince, BPHE, MPH (MPH Class of 2018)

Mary-Liz Warwick, BA, MA (c) (Executive Director, The Learning Disabilities Association of Sudbury & the Northern Ontario for Learning Differences)

*Wendy Larouche (Resource Facilitator and Community Outreach,
Learning Disabilities Associate of Sudbury)*

Gerald McKinley, PhD (Assistant Professor, Western University)

BACKGROUND

Shelley van Dam needs to write a policy brief for her board on the effects of learning disabilities. This policy brief is a response to the upcoming termination of some of the funding for the Learning Disabilities Association of Sudbury (LDAS). The LDAS provides various programs that support students and families that have, or are in the process of being identified as having, a learning disability. The LDAS is a not-for-profit organization that operates throughout Greater Sudbury and across Northeastern Ontario to provide assistance to students who have learning disabilities so they attain the highest level of education possible. Some funding sources are available in the short term, including an Ontario Trillium Foundation grant that allows the LDAS to hire part-time employees in the organization's satellite offices located in North Bay, Sault Ste. Marie, and Timmins. With this Ontario Trillium Foundation grant ending soon, Shelley realized that the LDAS would not be able to continue employing these people, and ultimately knew that the students in those regions who have learning disabilities would suffer. Shelley identified one possible solution that may help the organization avoid having to cease operations at their satellite offices—looking for more sustainable sources of funding from provincial ministries such as the Ministry of Children, Community and Social Services.

In order to develop the appropriate policy brief required by her board, she needed to gather and present the most up-to-date information available. Students who have learning disabilities have average- to above-average intelligence but require different teaching methods in order to successfully complete school. Shelley found recent data from Statistics Canada (2015) showing the proportion of students who have learning disabilities dropping out of high school was 33% of total students with learning disabilities, compared with 13.1% of the total student population without learning disabilities. She wanted to discuss how socioeconomic status plays a role in one's health and the importance of successfully obtaining at least a high school education, as that opens the door for other post-secondary educational opportunities. Graduating from high school is necessary in today's job market because many jobs require post-secondary credentials as a prerequisite to employment. Shelley found research discussing how a lack of education for Canadians who have learning disabilities can fuel further inequities including food scarcity, incarceration and crime. The ecological systems theory, social learning theory, and strain theory were all discussed to better understand some underlying problems that may contribute to the continued, cyclical health disparities faced by Canadians who do not have a high school diploma. By including this information, Shelley hopes to highlight the effects of inadequate support for students who have learning disabilities throughout their academic

Supporting Students with Learning Disabilities: Reducing Secondary School Non-Completion and its Associated Health Disparities

careers, and how this can increase health care costs not only to the individual, but to society as a whole.

OBJECTIVES

1. Understand why knowledge gaps exist regarding learning disabilities and how these gaps contribute to stigmatization.
2. Explore the complex interaction between social and cultural determinants of health in local contexts and how this interaction affects specific population groups (Canadians who have learning disabilities).
3. Consider how the ecological systems, social learning, and strain theories, and the varying definitions of learning disabilities, contribute to the negative cycle of social and cultural determinants of health for Canadians who have learning disabilities.
4. Synthesize evidence to create a concise evidence brief.

DISCUSSION QUESTIONS

1. How important is education in terms of the present job market? (Is an undergraduate degree equivalent to a high school degree 30 years ago?)
2. In what ways can education impact the health of individuals and their families?
3. Define learning disability.
4. What misconceptions exist in the school setting about students who have learning disabilities?
5. What problems and barriers did the learning teams identify for Canadians who have learning disabilities? What problems and barriers did the learning teams identify for other identified vulnerable populations?
6. What problems would Shelley face if the LDAS was unable to continue providing its advocacy, support, and programs to people who have learning disabilities?

KEYWORDS

Education; learning disabilities; social determinants of health; socioeconomic status; unemployment; high school non-completion